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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/700,439 | 11/13/2000 | Rudolf Schwarte | 752-00 | 5272 |

7590

06/17/2002

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EXAMINER

KAO, CHIH CHENG G

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 06/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/700,439

Applicant(s)

SCHWARTE, RUDOLF

Examiner

Chih-Cheng Glen Kao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,7 and 19-21 is/are rejected.
- 7) ☒ Claim(s) 2,5,6,8-18,22 and 23 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "terminals 8" (page 12, line 8) and "delay member 15" (page 17, line 28). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

Fig. 5 and 6, #20

Fig. 11, #22 and 36

Fig. 12, #11, 22, 30, 41, 42, 44, 45, and 46

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 12 recites the limitation "the four pixel elements" in line 3. There is insufficient antecedent basis for this limitation in the claim. This objection may be obviated by changing the claim dependency from claim 9 to claim 11. For purposes of examination, the claim has been treated as such. Appropriate correction is required.

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5. Claim 18 recites the limitation "each PMD-pixel" in line 2. There is insufficient antecedent basis for this limitation in the claim. This objection may be obviated by changing the claim dependency from claim 16 to claim 17. For purposes of examination, the claim has been treated as such. Appropriate correction is required.

6. Claim 21 recites the limitation "the pixels" in lines 6-7. There is insufficient antecedent basis for this limitation in the claim. This objection may be obviated by changing the claim dependency from claim 1 to claim 8. For purposes of examination, the claim has been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3, 4, 7, and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwarte (WO 98/10255) in view of Lambeth (US Patent 4826312).

8. Regarding claim 1, 4, 7, and 19-21, Schwarte discloses an apparatus for detecting phase and amplitude of electromagnetic waves (Title) comprising: at least two photosensitive modulation photogates (Fig. 6, "Gam and Gbm") and shaded accumulation gates (Fig. 6, "Ga and Gb"), connected to a reading-out device (Fig. 13, #15) and modulating device to increase or

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reduce potential of the modulation photogates (Fig. 12, #11, "+Um(t)", and "-Um(t)") wherein the accumulation gates are in the form of reading-out diodes (Fig. 13, #2 and "n+" connected to "Ga" and "Gb") to form a PMD-pixel (Abstract, last sentence) for cameras and obtaining or processing signals and suppressing noise (Claims 19 and 20) and characterized in that a scene of which an image is to be produced is illuminated with light modulated in accordance with a modulation function, wherein the modulation photogates are modulated with the same but now bipolar or push-pull modulation function and wherein selectively for half of a 2-quadrant or 4-quadrant pixel of pixels 90° phase-shifted modulation is effected in the case of sine modulation (Fig. 9, 11, and 12), and characterized in that the modulation photogates adjoining the accumulation gates, on the side towards the accumulation gates, partially involve a covering by a contact of high conductivity and very low transparency of electromagnetic waves (Fig. 13, electrode of "Ga" and "Gb" above the "n+" material).

However, Schwarte does not seem to specifically disclose long narrow parallel strips or the length ten times more than the wavelength of the electromagnetic radiation (col. 2, lines 48-50).

Lambeth teaches long narrow parallel strips and the length ten times more than the wavelength of the electromagnetic radiation (Fig. 1).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the strips of Lambeth with the apparatus of Schwarte, since one would be motivated to have a relatively large light sensitive area and a relatively low capacitance to better control the spill and fill process as shown by Lambeth (col. 2, lines 55-65).

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9. Regarding claim 3, Schwarte in view of Lambert suggests an apparatus as recited above. However, Schwarte does not seem to specifically disclose the width in the order of magnitude of the wavelength.

Lambert further teaches photogates having a size and shape similar to the size and shape of the beam cross section (col. 2, lines 45-50), which in the case of Schwarte is the wavelength of the electromagnetic wave.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the width in the order of magnitude of the wavelength with the apparatus of Schwarte in view of Lambert, since one would be motivated to optimize the signal-to-noise ratio as shown by Lambert (col. 2, lines 45-46).

Allowable Subject Matter

10. Claims 2, 5, 6, 8-18, 22, and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 2, prior art does not specifically disclose or fairly suggest the apparatus for detecting the phase and amplitude of electromagnetic waves wherein the width of the modulation photogates greater than the width of the accumulation gates in combination with all the limitations in the claim and base claim.

Regarding claim 5, prior art does not specifically disclose or fairly suggest the apparatus for detecting the phase and amplitude of electromagnetic waves wherein the paired modulation

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photogates are in a push-pull relationship and wherein the two pairs of modulation photogates are connected respectively in a push-pull mode in combination with all the limitations in the claim and base claim.

Regarding claim 6, prior art does not specifically disclose or fairly suggest the apparatus for detecting the phase and amplitude of electromagnetic waves wherein a plurality of modulation connections are arranged at substantially equal spacings along the length of the strips in combination with all the limitations in the claim and base claim.

Regarding claim 8, prior art does not specifically disclose or fairly suggest the apparatus for detecting the phase and amplitude of electromagnetic waves wherein the strip directions of adjacent pixel elements at different modulation voltages are preferably perpendicular to each other, in combination with all the limitations in the claim and base claim.

Regarding claims 22 and 23, prior art does not specifically disclose or fairly suggest the apparatus for detecting the phase and amplitude of electromagnetic waves used in an optical pll- or dll-circuit in combination with all the limitations in the claim and base claim.

Conclusion

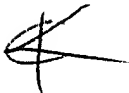
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (703) 605-5298. The examiner can normally be reached on M - Th (8 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



gk

June 14, 2002



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